



IMPACTS ANALYSIS

U.S. Environmental Protection

Agency

Region 7

Kansas City, Kansas

Translator

IMPACT = EFFECT

Kinds of Impacts

- ▼Direct

- ▼Indirect

- ▼Cumulative

Direct Impacts

Caused by the action and occur at the same time and place.

Direct Impacts



-350 acres of pasture
converted

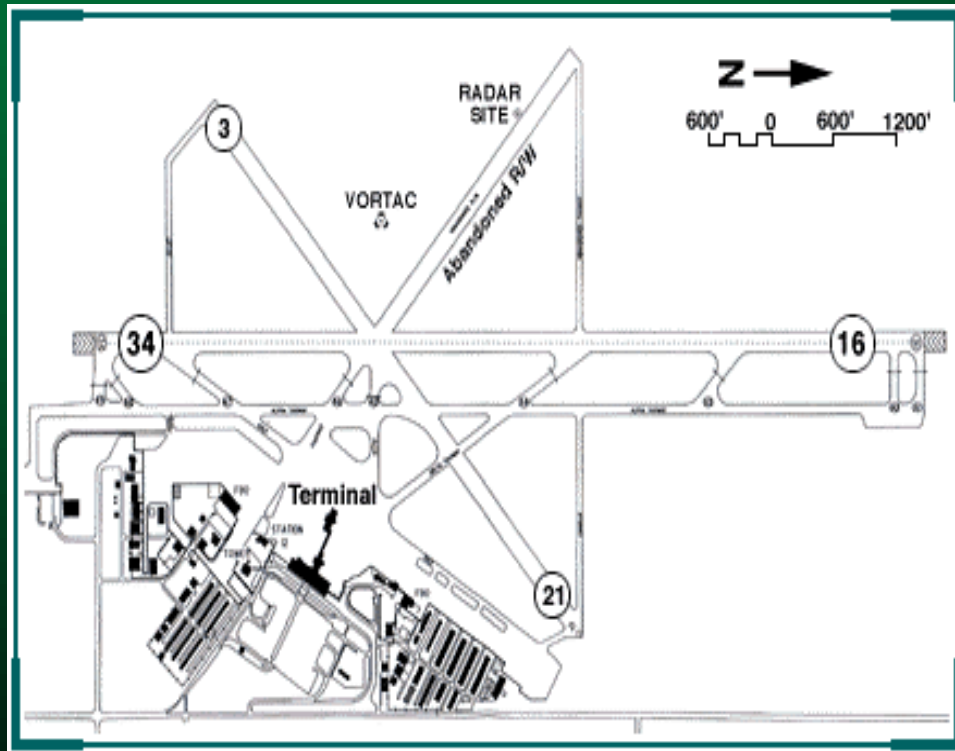
-3 acres of wetlands
lost

-2 streams channelized
for 1.2 miles

Indirect Impacts

- ▼ Are caused by the action
- ▼ Are later in time or farther removed by distance, but....
- ▼ Are still reasonably foreseeable

Indirect Impacts



- De-icing fluids and hydrocarbons in stormwater
- Noise contour of 87 dB 0.5 miles off runway
- Ground support traffic
- Air pollutants/haze

Cumulative Impacts

- ▼ Result from past, present and reasonably expected future actions

Cumulative Impacts



Actions -

- Airport improvements and expansion
- Multi-modal infrastructure
- Industrial complex

Impacts - Point and non-point water discharges, habitat fragmentation, local air quality degradation, noise, wildlife population dynamics in flux

Impacts Analysis

- ▼ Quantitative
- ▼ Qualitative

So What?

The Council on Environmental Quality requires that these impacts be examined in the Environmental Consequences chapter of Environmental Impact Analysis documents [40 CFR 1502.16 (a)(b)]

So What?

NEPA documents do not necessarily require cumulative impact assessments in every case. (*Notable exception would be 404 (b)(1) evaluation*) However, EPA expects that the action agency consider whether cumulative impacts is a significant issue that should be addressed every time a NEPA document is prepared.

So What?

The Clean Water Act requires an evaluation of the cumulative impacts associated with an action that affects Waters of the U.S. [404(b)(1) Guidelines]

So What?

Cumulative impacts that result in significant impacts can be the basis for adverse ratings by EPA.

How stale is this?

The CEQ has stated that, “As a rule of thumb, if the proposal has not yet been implemented, or if the EIS concerns an ongoing program, EISs that are more than 5 years old should be carefully reexamined to determine if the criteria in Section 1502.9 compel preparation of an EIS supplement.”

Section 1502.9

(c) Agencies:

1. Shall prepare supplements to either draft or final environmental impact statements if:

(i) The agency makes substantial changes in the proposed action that are relevant to environmental concerns; or

(ii) There are **significant new** circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.

Example

Montana Trout Unlimited
v.s. Army Corps of
Engineers

Cumulative Impacts Analysis

CIA

CIA State of the Art?

CEQ guidance (1998) “No
cookbook”

Environment Canada (2000)
“Emerging “

Cumulative Analysis

- ▼ Need a baseline
- ▼ Need a significance threshold
- ▼ Need geographic and temporal reference

Baseline

- ▼Current Condition
- ▼Past Condition

Significance

- ▼ Magnitude
- ▼ Duration

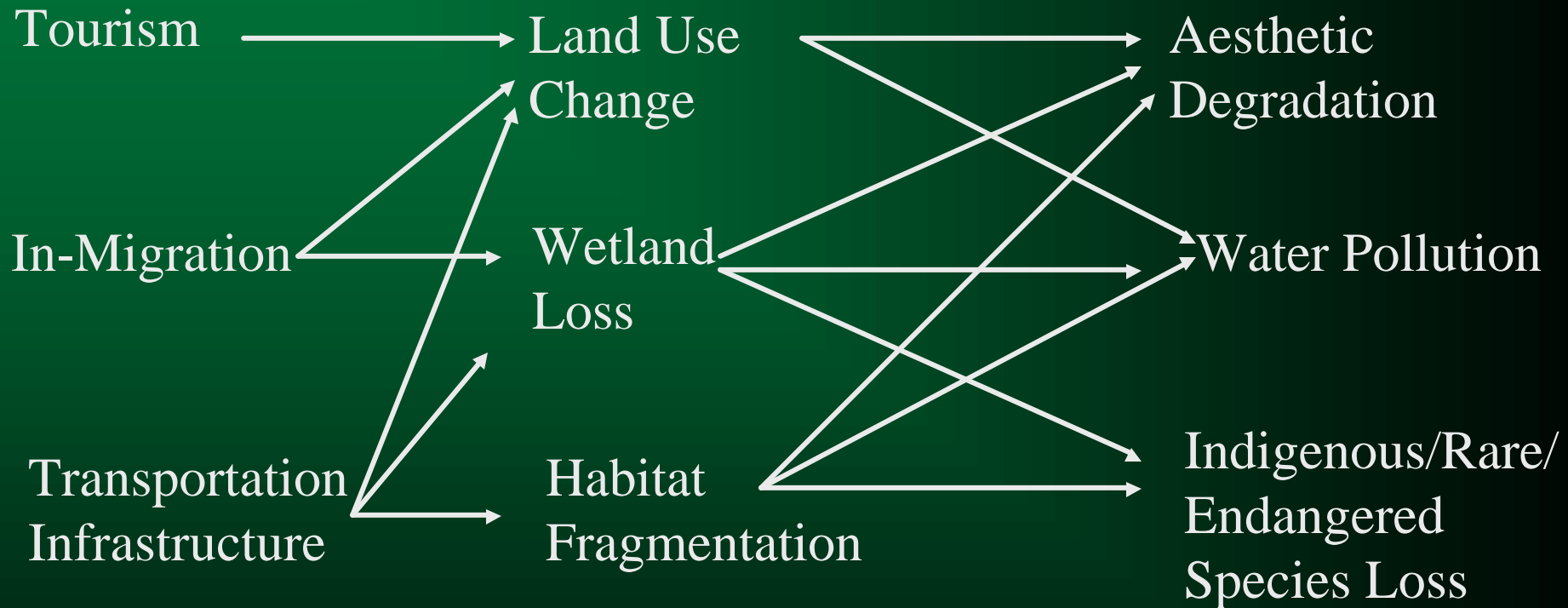
Geographic and Temporal Scale

- ▼How far is the impact exerted?
- ▼For how long is the impact in effect?

CIA Methods

- ▼ Questionnaires, interviews and panels
- ▼ Checklists
- ▼ Matrices
- ▼ Networks and systems diagrams
- ▼ Modeling
- ▼ Trends analysis

Network



Adapted from Australian Commonwealth EPA, 1994

Matrices

Spawning Migration Sediment Transport

← Resource Component

Alt. 1	3	2	1
Alt. 2	1	3	3

X

Alt. 1	1	3	3
Alt. 2	2	1	1



Temporal effect factor

Total Cumulative Impact Score

= Alt. 1 12
Alt. 2 8

Adapted from Federal Energy Regulatory Commission, 1987

Checklists

POTENTIAL ENVIRONMENTAL IMPACTS

None	Minor	Major
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HYDROLOGY

Water drainage

D+

Water quality

C-

FLORA/FAUNA

Endangered Species

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Vegetation

C-

General Services Administration

Approach to CIA- Scoping

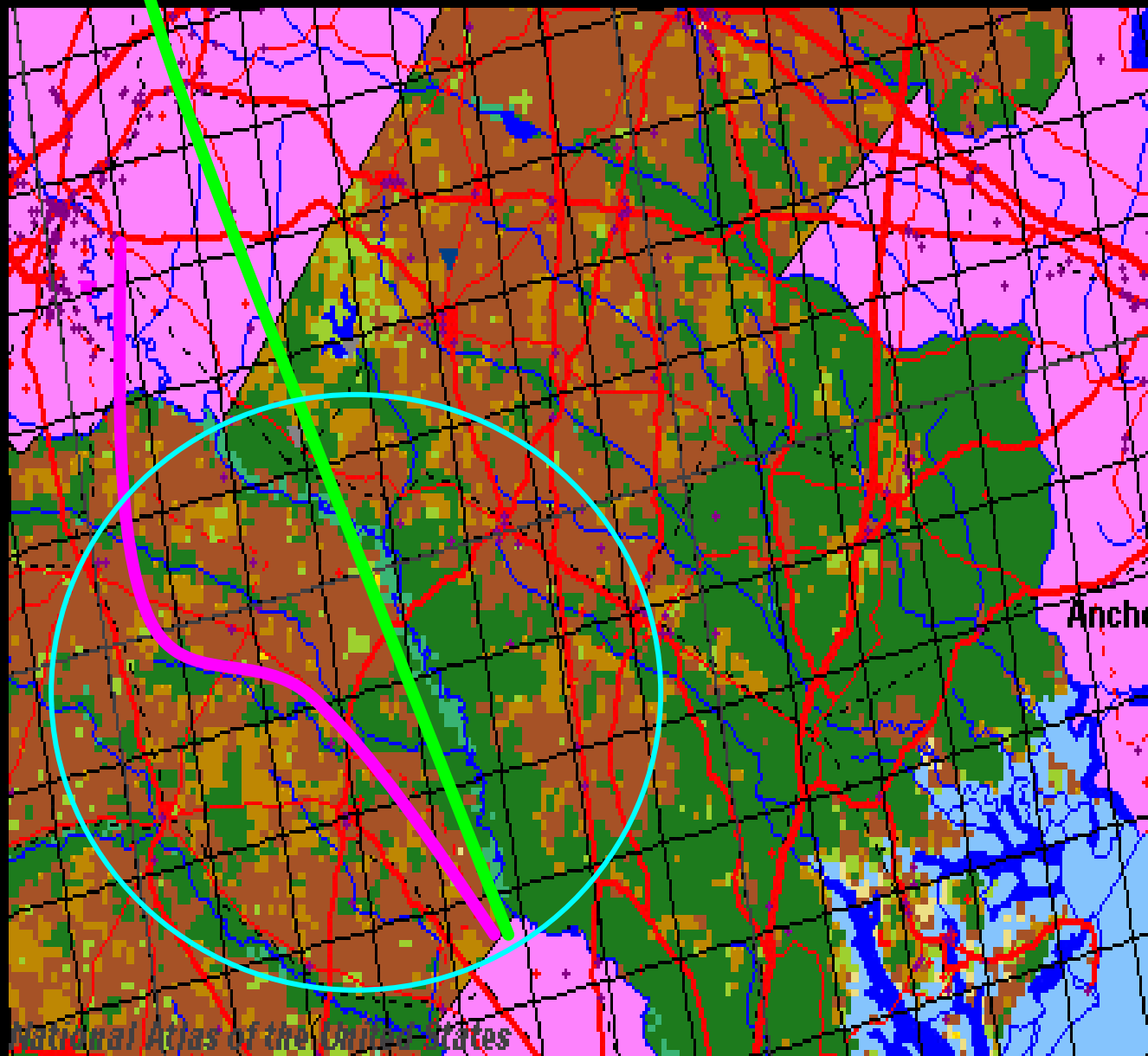
- ▼ Identify significant cumulative effects issues and define assessment goals
- ▼ Establish the geographic scope for the analysis
- ▼ Establish timeframe for the analysis
- ▼ Identify other actions affecting the resources, ecosystems, and human communities of concern

Approach: Describe Affected Environment

- ▼ Characterize resources in terms of response to change and capacity to withstand stresses
- ▼ Characterize stresses exerting impact and relation to regulatory thresholds
- ▼ Define a baseline condition for the resources, ecosystems, and human communities

Approach: Determine Environmental Consequences

- ▼ Identify important cause-and- effect relationships between ecosystems, and human communities
- ▼ Determine the magnitude and significance of cumulative effects
- ▼ Modify or add alternatives to avoid, minimize or mitigate significant cumulative effects
- ▼ Monitor the cumulative effects of the selected alternative and adapt management



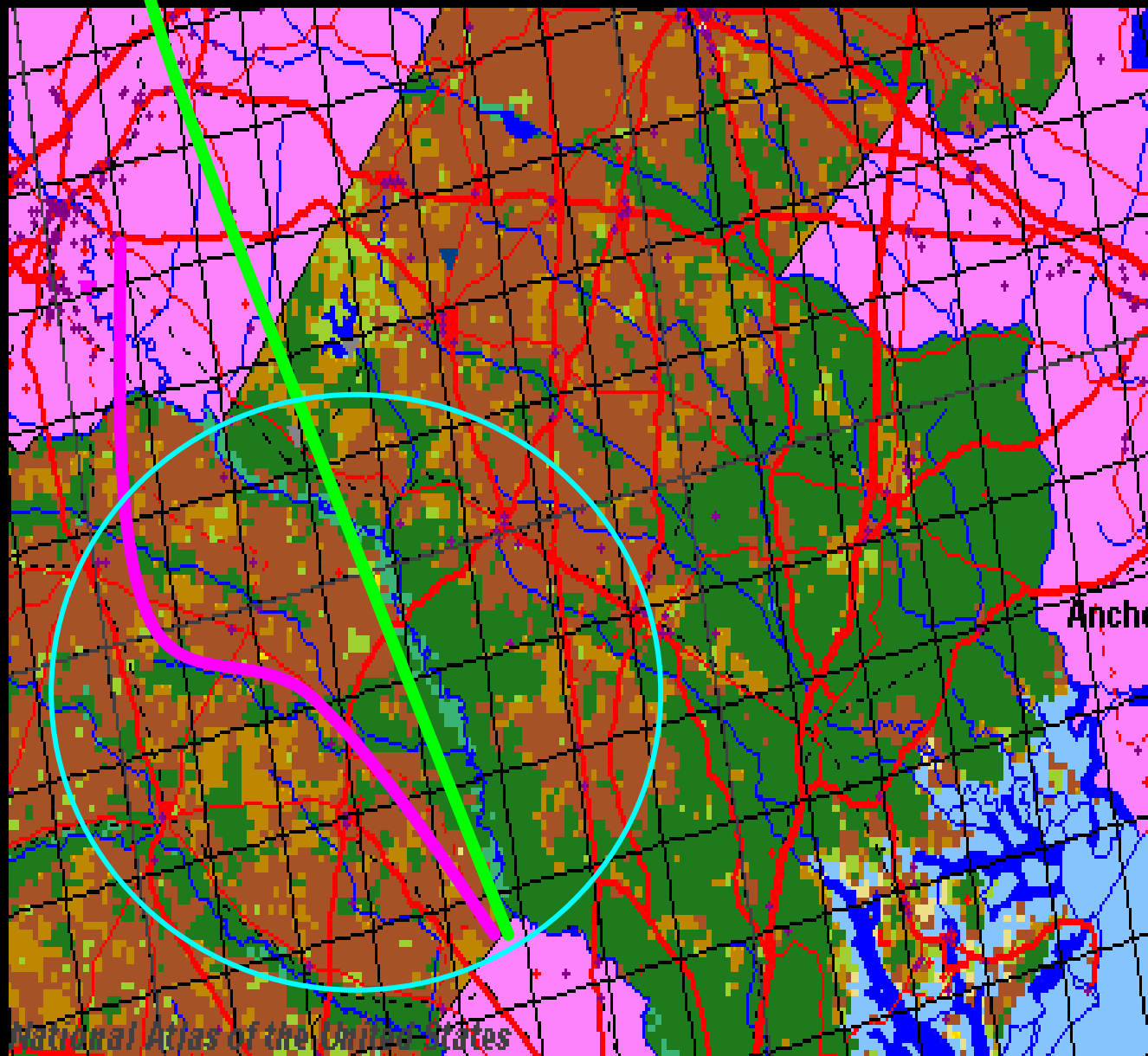
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Issues

- ▼ Aquatic biota
 - mussels
 - fish
- ▼ Habitat fragmentation
- ▼ Toxic Sediments



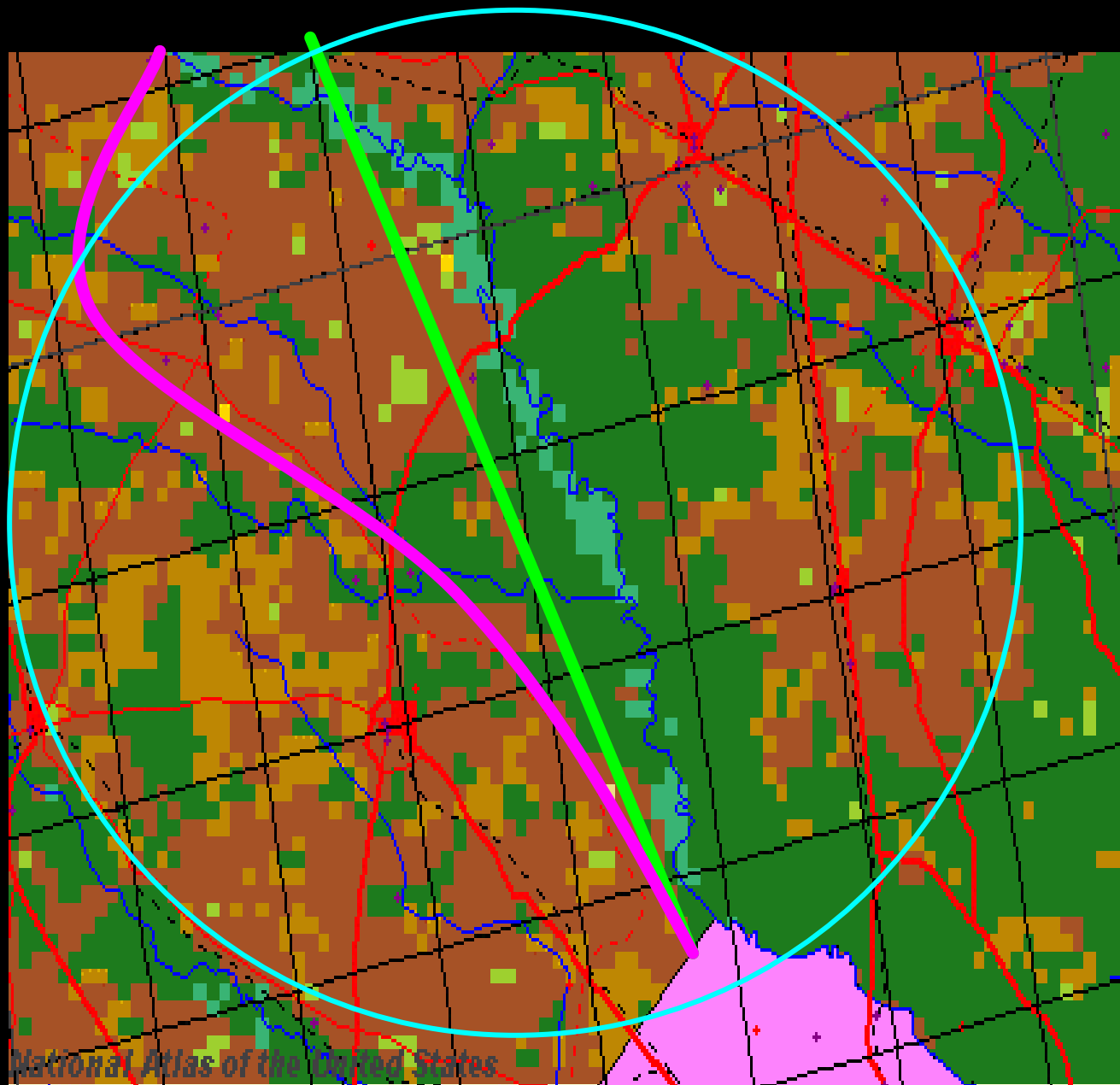
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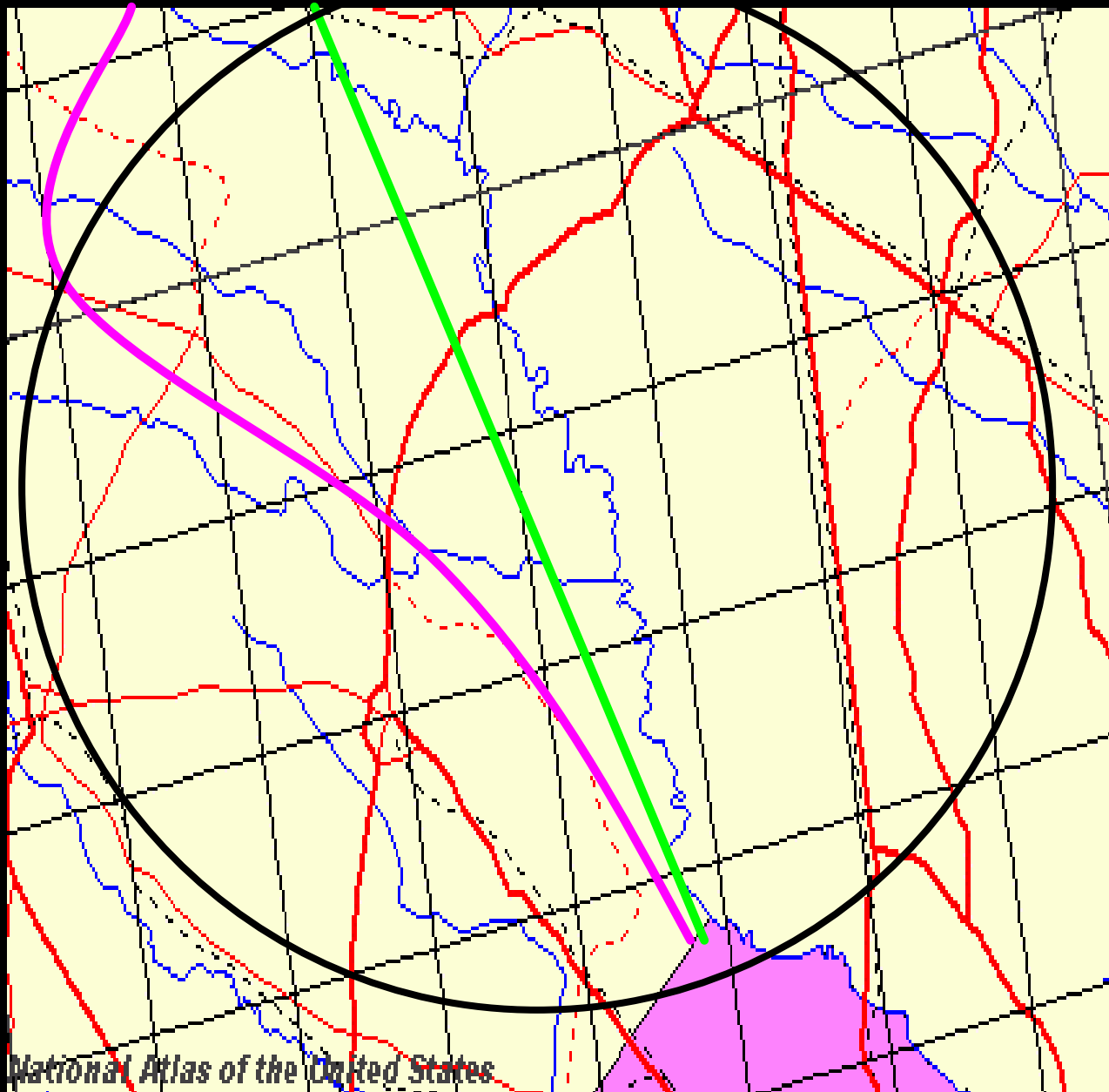
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U.S. 21.5

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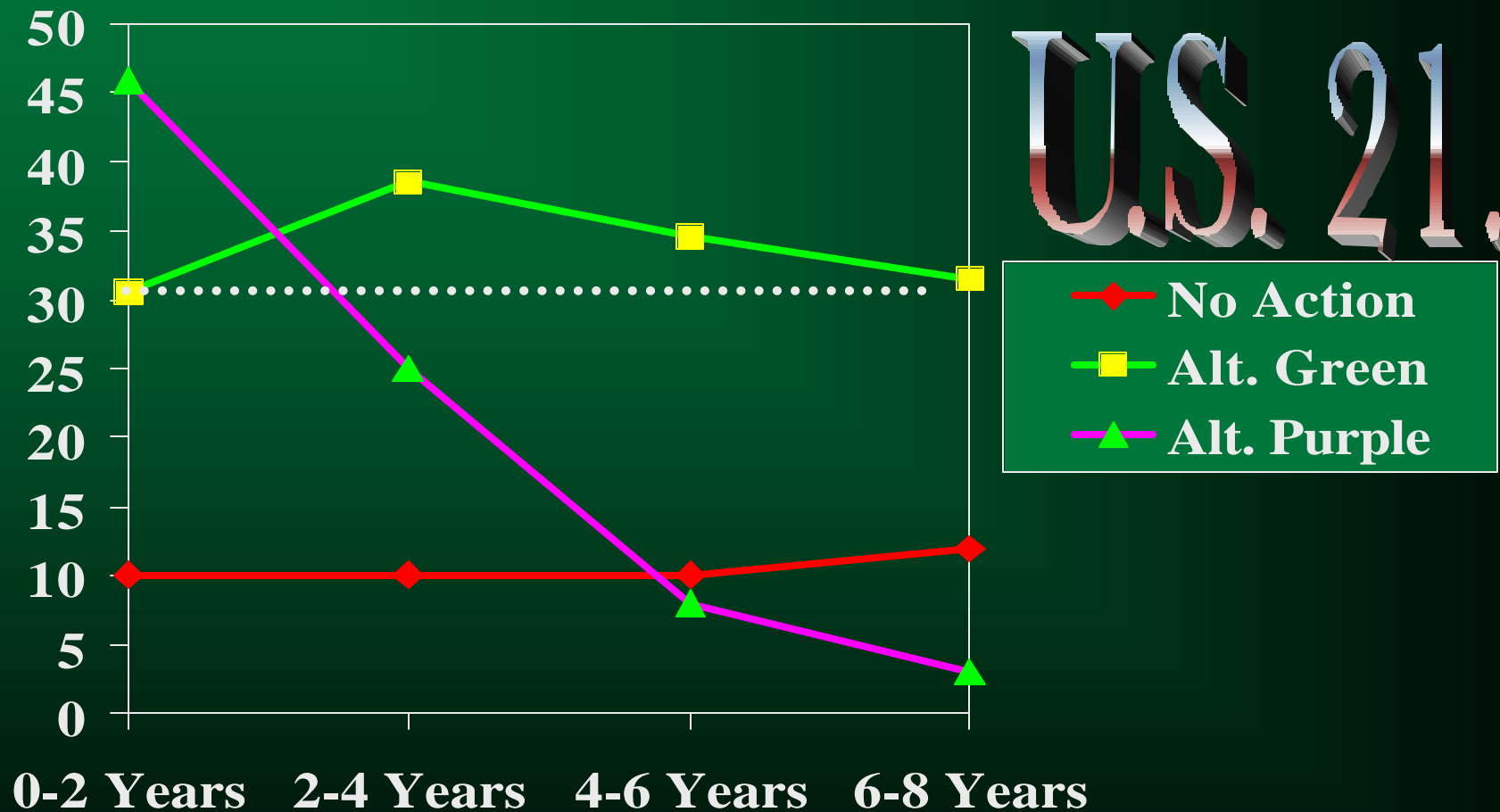


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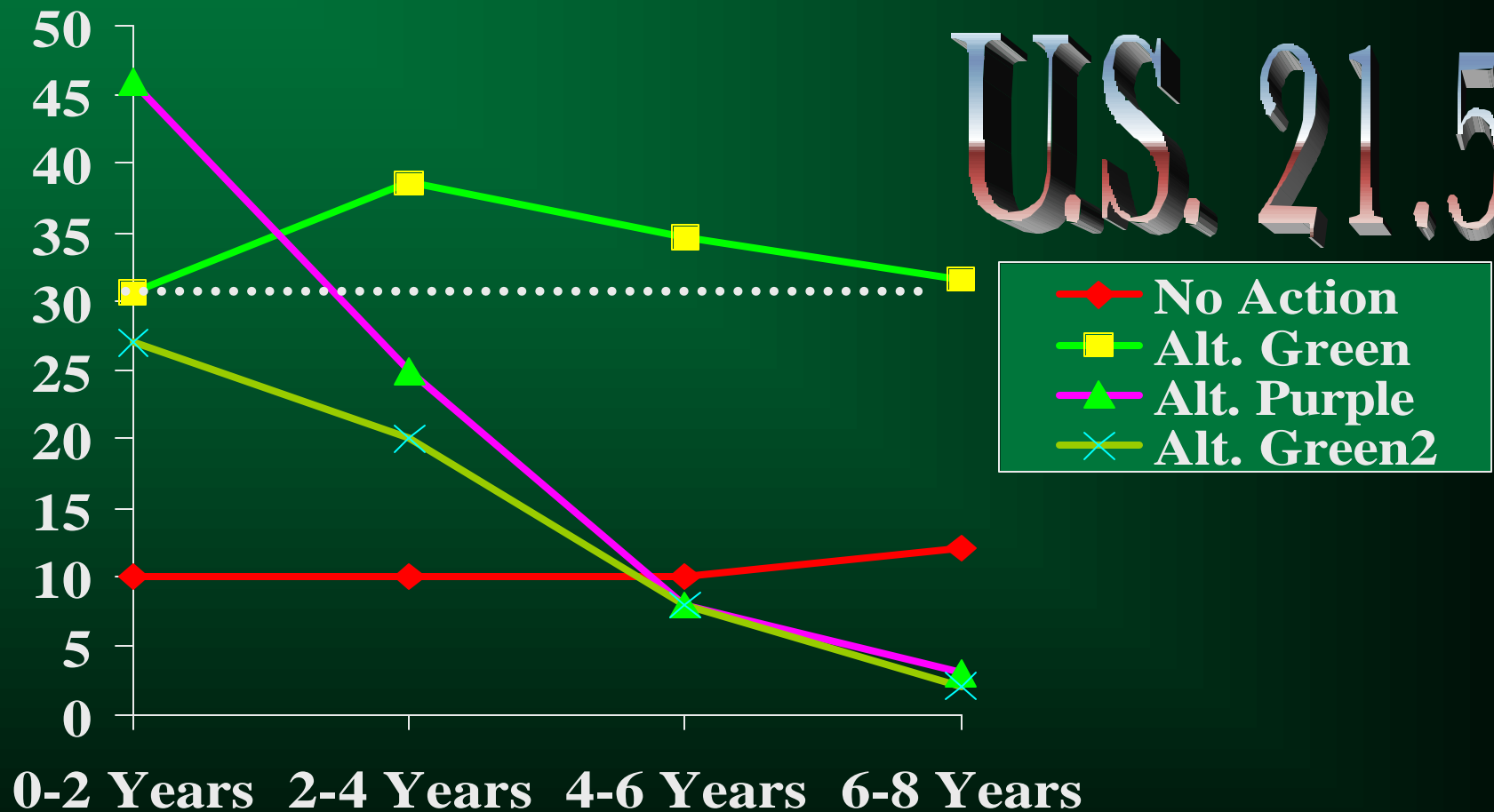
Aqua River Selenium []

US. 21.5



Aqua River Selenium []

US. 21.5



References

- Council on Environmental Quality (1997). Considering Cumulative Effects Under the National Environmental Policy Act
- Navigant Consulting, Inc. (2000). Attachment B - Animas La-Plata Project (Final 404(b)(1) Evaluation
- U.S. EPA, Office of Federal Activities (1993). Habitat Evaluation: Guidance for the Review of Environmental Impact Assessment Documents
- Canadian Environmental Assessment Agency (1999). Cumulative Effects Assessment A Practitioners Guide, AXYS Env. Consulting Ltd. http://www.ceaa-acee.gc.ca/0011/0001/0004/guide_e.htm